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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,384	10/16/2003	Muqtada Husain	10541-1868	2103

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EXAMINER

LUM VANNUCCI, LEE SIN YEE

ART UNIT	PAPER NUMBER
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3611

DATE MAILED: 04/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/687,384	Applicant(s) HUSAIN, MUQTADA	
	Examiner Lee Lum	Art Unit 3611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11, 13-20, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 7-10, 12 and 21-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Amendment After Final was filed 3/21/05 in which Claims 25 and 26 were also added.

Upon reconsideration, Examiner has provided new rejections, and apologizes for the inconvenience.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Yao et al 6728615.

Yao discloses a system for providing an end-of-travel feedback from a road wheel to a driver of a vehicle, the vehicle having steer-by-wire system, the system comprising

Steering mechanism including steering wheel 44 and steering shaft 46,

Clutch 52 ("reaction torque" generator) coupling the steering shaft with the road wheel when the road wheel is at an end-of-travel position (as well as any inclusive position) as disclosed in c4, ln 12-16, and c3, ln 60-65; "[controller] 12 links road wheel subsystem 15 and steering wheel subsystem 16",

Controllers 12, 13 that "sense" when the road wheel has reached the end-of-travel position (as well as any inclusive position), via road wheel angle sensors 32, 34, and engages the clutch in response,

In addition, clutch is actuated based on a rate of change of the road wheel angle (c6, ln 40-57; calculations including "road wheel angular rates"),

Motors 40, 42 controlling the angle of the road wheels.

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. **Claims 11, 13 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao in view of Dilger et al 6219604.

Re Claim 11, Yao does not disclose a restriction of the road wheel via a sensor, while Dilger shows a similar steering system including

A sensor/mechanism (unidentified) in c7, ln 7-10 that detects a restricted road wheel.

It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this configuration, as shown in Dilger, to further increase the accuracy of the steer-by-wire system via detection, and resolution, of this particular travel condition, thus maximize safety and comfort.

Re Claims 13 and 14, Yao discloses the clutch as actuated based on the road wheel angle, and the rate of change of this angle, as previously provided.

B. **Claims 15-19, 25 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao in view of Hefner et al 6389343.

Yao does not disclose the clutch as mechanically coupling the steering shaft to the road wheel. Hefner shows this configuration in c2, ln 50-56, with any of the disclosed mechanical devices providing this configuration. While Yao's electrical coupling is functionally equivalent, it would have been obvious to one with ordinary skill in the art at the time the invention was made to include this embodiment, as shown in Hefner, for different applications in which a mechanical coupling is more advantageous, thus increasing applicability.

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C. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yao in view of Hefner, and in further view of Andonian.

The previous references do not disclose the engagement of the clutch as based on the current draw of the motor, while Andonian shows this arrangement in c2, ln 59-65, with motors 20, 26 actuated by "any suitable devices", c2, ln 34-36. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this configuration, as shown in Andonian, to provide a safety factor by which the motor may be operated, thus increase its proper function, and operational life.

D. **Claims 15-19, 25 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao in view of Hefner et al 6389343.

Yao does not disclose the clutch as mechanically coupling the steering shaft to the road wheel. Hefner shows this configuration in c2, ln 50-56, with any of the disclosed mechanical devices providing this configuration. While Yao's electrical coupling is functionally equivalent, it would have been obvious to one with ordinary skill in the art at the time the invention was made to include this embodiment, as shown in Hefner, for different applications in which a mechanical coupling is more advantageous, thus increasing applicability.

4. **Claims 7-10, 12, 21-24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Prior art does not disclose the system described above further comprising, *inter alia*,

5. The prior art made of record, and not relied upon, is considered pertinent to the disclosure: Bohner et al 6285936, 6220385, 6138788.

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6. RESPONSE TO REMARKS

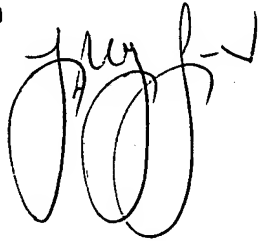
Examiner has provided new rejections, employing Yao, and in view of Hefner, etc. It is noted that in Claims 1 and 15, "to couple the steering shaft with the road wheel" (emphasis added here, and in the rejection provided above), is broad, and thus is reasonably interpreted in likewise manner. Yao discloses a steer-by-wire system with clutch/mechanism 52 that performs this function, such that manipulation of the steering wheel (and shaft) effects respective manipulation of the road wheel.

7. Communication with USPTO/Examiner

Any inquiry concerning this communication, or others, should be directed to Ms. Lum at 571 272-6649, M-F, 9-6. If attempts to reach the examiner are unsuccessful, her supervisor, Ms. Lesley Morris is at 571 272-6651. Our fax number is 703 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications: private PAIR only, for published applications: private or public PAIR. For more information re PAIR: <http://pair-direct.uspto.gov>. Questions re private PAIR: contact the Electronic Business Center (EBC) at 866 217-9197.

Ms. Lee S. Lum
Examiner
4/5/05

A handwritten signature in black ink, appearing to read 'Lum', with a checkmark to the right.